

**UNITED STATES DEPARTMENT OF COMMERCE****United States Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/516.004	02/29/00	KIZILYALLI	I 46-19-123

MMDC1/0501  
Docket Administrator (Room 3C-512)  
Lucent Technologies Inc  
600 Mountain Avenue  
PO Box 636  
Murray Hill NJ 07974-0636

EXAMINER

NADAV, O

ART UNIT

PAPER NUMBER

2811

DATE MAILED:

05/01/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
09/516,004

Applicant(s)  
Kizilyalli et al.

Examiner  
ORI NADAV

Art Unit  
2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Apr 12, 2001
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above, claim(s) 1-5 and 12-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some\* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 20) ☐ Other: \_\_\_\_\_

Art Unit: 2811

## **DETAILED ACTION**

### ***Election/Restriction***

1. Applicant's election with traverse of claims 6-11 in Paper No. 6 is acknowledged. The traversal is on the ground(s) that the claimed invention does not require "providing dopant to the spaced apart regions". This is not found persuasive because claim 1, line 8 clearly recites "providing dopant to the spaced apart regions".

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 6-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claimed limitation of an amorphous insulative layer having a dielectric constant greater than 5 relative to free space, as recited in claims 6 and 9, is unclear as to how dielectric constant can be greater than a space.

Art Unit: 2811

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6-7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu (6,194,748).

Yu teaches in figure 1 an integrated circuit comprising a semiconductor material 14 of the first conductivity type, a FET gate structure on the semiconductor material comprising a conductive layer 36 and an amorphous tantalum pentoxide 34 (column 5, lines 50-55) formed between the conductive layer and the semiconductor material and having a dielectric constant greater than 5 relative to free space, source and drain regions 17, 19 of the second conductivity type along the surface region of the semiconductor material.

Yu does not teach source and drain regions being formed self-aligned with the gate structure. However, forming source and drain regions self-aligned with the gate structure are processing limitations which do not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced. In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985). Therefore, the claimed structure is considered to be at least obvious over Yu's structure.

Art Unit: 2811

In the alternative, Yu teaches forming source and drain regions self-aligned with the gate structure (column 1, lines 6-27). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the source and drain regions being self-aligned with the gate structure in Yu's device, because it is conventional in the art to form the source and drain regions as self-aligned with the gate structure in order to simplify the processing steps, of which judicial notice may be taken.

Regarding claims 9-11, the claimed limitations of a gate leakage current being less than one milliamp per cm<sup>(-2)</sup> during operation are inherent in Yu's device, because Yu's structure is identical to the claimed structure.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yu in view of Endo (5,596,214).

Yu teaches substantially the entire claimed structure, as applied to claim 6 above, except a layer of silicon oxide disposed between the insulative layer and the surface region.

Endo teaches in figure 3a layer of silicon oxide disposed between the insulative layer and the surface region (column 14, lines 57-58). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form a layer of

Art Unit: 2811

silicon oxide disposed between the insulative layer and the surface region in Yu's device in order to improve the leakage current characteristics of the device.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References C-E and N are cited as being related to gate oxide comprising tantalum pentoxide.

**Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.**

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(703) 308-8138**. The Examiner is in the Office generally between the hours of 7 AM to 3 PM (Eastern Standard Time) Monday through Friday. If attempts to reach the examiner by

Art Unit: 2811

telephone are unsuccessful, the examiner's supervisor, Tom Thomas, can be reached at **(703) 308-2772**.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**

Ori Nadav, Ph.D.

April 29, 2001

*William Mintel*

**William Mintel**  
**Primary Examiner**  
**Art Unit 2811**